



UNITED STATES PATENT AND TRADEMARK OFFICE

een

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,861	03/16/2004	Hiroki Nakamura	250442US2	1575
22850	7590	05/21/2007		
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER SEMENENKO, YURIY	
			ART UNIT	PAPER NUMBER
			2841	
			NOTIFICATION DATE	DELIVERY MODE
			05/21/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No.		Applicant(s)	
	10/800,861		NAKAMURA, HIROKI	
	Examiner		Art Unit	
	Yuriy Semenenko		2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03/26/2007 and Telephonic Interview at 0.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 16-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 16-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Amendment filed on 03/26/2007 has been entered.
In response to the Office Action dated 09/26/ 2006, Applicants have amended claims 1, 2, 3, 4, 5.
Claims 6-15 have been cancelled. Claims 16-29 are newly added.
Claims 1-5 and 16-29 are now pending in the application.

Specification

2. At Personal Interview dated 03/27/2007 the agreement was reached to accept Applicant's terminology "stress migration" as having meaning of the "stress redistribution " in contest of the Specification.

Claims

3. Claims 4 and 5 amendments, filed on 03/26/2007 are considered and acknowledged. The claims amendments are approved.

Response to Arguments

4. Applicant's arguments filed on 03/26/2007 are considered and acknowledged but they are not persuasive.
 - 4.1. Applicants argue with respect to independent claims 1 and 2, "Yamato et al. reference does not mention or suggest such a seed layer." But Ueno, not Yamato, clearly discloses also in the "Background of the invention" section a metal seed layer 17, Fig. 1 formed on the first metal diffusion-preventing layer 15. The Applicant cannot show nonobviousness by attacking references individually where the rejections are

based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicants argue that Ueno reference is teaching away from the use seed layer. However, Ueno teaches both of the method to improve adhesion, namely : a metal seed layer 17, Fig. 1 (page 2, [0028] – [0029]) and the organic silane compound (page 3, [0027]-[0034]).

Examiner agrees with Applicants arguments that the first diffusion prevention layer (15) of the Ueno reference is already present on the side of wiring layer (11). And as such it will be enough to use just Ueno reference for rejection. But the Examiner applies Yamato et al. reference to especially pointed out that at the time the invention was made, it was well know to use the second metal layer covering the exposed surface including the side surface of the multilayered structure. This is important because claim 1, 2 and 3 mention this feature. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

4.2. With respect to claim 4 the Examiner disagrees that Kato's structure different from the applicants structure claimed in claim 4. Kato discloses in Fig. 1 a display device 100 having at least one wiring 3, comprising electrodes (margin region 31a, 32a, 311, 325 Fig. 1, 2 and page 3, [0032] and [0036]) of driving elements 41, 42 arranged to form a matrix, scanning lines 311, the data lines 325 connected to the driving element, which is exactly as claimed in claim 4. And further problem how to prevent metal diffusion from metal layer to insulating substrate is a common problem for such structure.

Art Unit: 2841

4.3. Applicant's arguments with respect to dependent claim 5 is considered and acknowledged but they are not persuasive as based on arguments with respect to independent claim 4 as discussed above.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5.1. Claims 1-3 are rejected under 35U.S.C. 103(a) as being unpatentable over Ueno et al. (PGPub # 2003/0008075) hereinafter Ueno in view of Yamato (Patent # 6388201) hereinafter Yamato.

As to claim 1: Ueno discloses in Fig. 3 a wiring, comprising: a first metal diffusion-preventing layer 15 formed on an insulating substrate 13 (page 3, [0037]); a metal wiring layer 11; and a second metal diffusion-preventing layer 29, Fig. 4 (page 5, [0060]) covering the exposed surface the metal wiring layer, wherein the metal wiring layer 11

are surrounded by the first metal diffusion-preventing layer 15 and the second metal diffusion-preventing layer 29, Fig. 4.

except, Ueno doesn't explicitly teach two things:

1. a metal seed layer formed on the first metal diffusion-preventing layer; and a metal wiring layer formed on the metal seed layer;
2. a second metal diffusion-preventing layer covering the exposed surface including the side surface of the multilayered structure having the metal seed layer and the metal wiring layer;

Ueno discloses also discloses in the "Background of the invention" section, at the time the invention was made, it was well know to use a metal seed layer 17, Fig. 1 formed on the first metal diffusion-preventing layer 15; and a metal wiring layer 11 formed on the metal seed layer 17.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for Ueno to include in his invention that a metal seed layer formed on the first metal diffusion-preventing layer and a metal wiring layer formed on the metal seed layer to improve adhesion metal wiring to metal diffusion-preventing layer.

Yamato discloses in Fig. 6 (e) a second metal diffusion-preventing layer 22 covering the exposed surface including the side surface of the multilayered structure (14, 20).

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for Ueno to include in his invention that a second metal diffusion-preventing layer covering the exposed surface including the side surface of the multilayered structure having the metal seed layer and the metal wiring layer to prevent the conductive layer from being bared, as taught by Yamato (column 9, lines 14-16).

As to claim 2: Ueno discloses in Fig. 3 a wiring, comprising: a first metal diffusion-preventing layer 15 formed on an insulating substrate 13 (page 3, [0037]); a metal wiring layer 11; and a second metal diffusion-preventing layer 29, Fig. 4 (page 5, [0060]) covering the exposed surface the metal wiring layer, wherein the metal wiring layer 11

are surrounded by the first metal diffusion-preventing layer 15 and the second metal diffusion-preventing layer 29, Fig. 4.

except, Ueno doesn't explicitly teach two things:

1. a metal seed layer formed on the first metal diffusion-preventing layer; and a metal wiring layer formed on the metal seed layer;
2. a second metal diffusion-preventing layer covering the exposed surface including the side surface of the multilayered structure having the metal seed layer and the metal wiring layer and the first metal diffusion-preventing layer;

Ueno discloses also discloses in the "Background of the invention" section, at the time the invention was made, it was well know to use a metal seed layer 17, Fig. 1 formed on the first metal diffusion-preventing layer 15; and a metal wiring layer 11 formed on the metal seed layer 17.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for Ueno to include in his invention that a metal seed layer formed on the first metal diffusion-preventing layer and a metal wiring layer formed on the metal seed layer to improve adhesion metal wiring to metal diffusion-preventing layer.

Yamato discloses in Fig. 6 (e) a second metal diffusion-preventing layer 22 covering the exposed surface including the side surface of the multilayered structure (14, 20) having the metal wiring layer 14 and the first metal layer 20.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for Ueno to include in his invention that a second metal diffusion-preventing layer covering the exposed surface including the side surface of the multilayered structure having the metal seed layer and the metal wiring layer and the first metal diffusion-preventing layer to prevent the conductive layer from being bared, as taught by Yamato (column 9, lines 14-16).

As to claim 3: Ueno discloses in Fig. 3 a wiring, comprising: a first metal diffusion-preventing layer 15 formed on an insulating substrate 13 (page 3, [0037]); a metal wiring layer 11 formed on the first metal diffusion-preventing layer 15; and a second

metal diffusion-preventing layer 29, Fig. 4 (page 5, [0060]) covering the exposed surface the metal wiring layer and the first metal diffusion-preventing layer 15, wherein the metal wiring layer 11 are surrounded by the first metal diffusion-preventing layer 15 and the second metal diffusion-preventing layer 29, Fig. 4.

except, Ueno doesn't explicitly teach a second metal diffusion-preventing layer covering the exposed surface including the side surface of the multilayered structure having the metal seed layer and the metal wiring layer and the first metal diffusion-preventing layer;

Yamato discloses in Fig. 6 (e) a second metal diffusion-preventing layer 22 covering the exposed surface including the side surface of the multilayered structure (14, 20) having the metal wiring layer 14 and the first metal layer 20.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for Ueno to include in his invention that a second metal diffusion-preventing layer covering the exposed surface including the side surface of the multilayered structure having the metal wiring layer and the first metal diffusion-preventing layer to prevent the conductive layer from being bared, as taught by Yamato (column 9, lines 14-16).

5.2. Claims 4-5 are rejected under 35U.S.C. 103(a) as being unpatentable over Kato (PGPub. #2002/0030978) hereinafter Kato in view of Ueno.

As to claim 4: Kato discloses in Fig. 1 a display device 100 having at least one wiring 3, comprising electrodes (margin region 31a, 32a, 311, 325 Fig. 1, 2 and page 3, [0032] and [0036]) of driving elements 41, 42 arranged to form a matrix, scanning lines 311, the data lines 325 connected to the driving element,

except, Kato doesn't explicitly teach electrodes of driving elements being surrounded by a first metal diffusion-preventing layer and a second metal diffusion-preventing layer.

Ueno discloses in Fig. 3 a wiring, comprising: a first metal diffusion-preventing layer 15 formed on a substrate (page 3, [0037]); a metal wiring layer 11; and a second

metal diffusion-preventing layer 29, Fig. 4 (page 5, [0060]) covering the exposed surface the metal wiring layer.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for Kato to include in his invention that electrodes of driving elements being surrounded by a first metal diffusion-preventing layer and a second metal diffusion-preventing layer to prevent degradation of the electrodes.

As to claim 5: Kato, as modified, discloses the display device having the wiring according to claim 4, wherein a transparent conductor layer 311 (page 3, [0032]) is formed on the wiring (margin region 31a, 311, Fig. 1, 2 and page 3, [0036]) with the second metal diffusion-preventing layer interposed therebetween.

except, Kato doesn't explicitly teach the second metal diffusion-preventing layer interposed therebetween.

Ueno discloses in Fig. 3 a wiring, comprising: a first metal diffusion-preventing layer 15 formed on a substrate (page 3, [0037]); a metal wiring layer 11; and a second metal diffusion-preventing layer 29, Fig. 4 (page 5, [0060]) covering the exposed surface the metal wiring layer.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for Kato to include in his invention that the second metal diffusion-preventing layer interposed therebetween to prevent degradation of the electrodes.

5.3. Claims 16 – 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueno in view of Yamato as applied to claims 1(2, 3) above, and further in view of Kato.

As to claims 16, 21 and 26: Ueno, as modifies, discloses the wiring having all of the claimed features as discussed above with respect claim 1(2, 3),

except, Ueno doesn't explicitly disclose the insulating substrate is formed of one of glass, a quartz glass, ceramics, and a resin material.

Kato discloses (page 3, [0032]) the insulating substrate is formed of one of glass, a quartz glass, ceramics, and a resin material.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for Ueno to include in his invention that the insulating substrate is formed of one of glass, a quartz glass, ceramics, and a resin material. motivated by its known suitability for its intended use. See MPEP §2144.07.

As to claims 17, 22 and 27: Ueno, as modifies, discloses the wiring having all of the claimed features as discussed above with respect claim 1(2, 3),

except, Ueno doesn't explicitly disclose the first metal diffusion-preventing layer is a planar layer.

Kato and Yamato disclose technology similar to use in application, where same of the metal layers are a planar layers.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for Ueno to include in his invention that the insulating substrate is formed of one of glass, a quartz glass, ceramics, and a resin material. motivated by its known suitability for its intended use. See MPEP §2144.07.

As to claims 18- 20, 23-25 and 28-29: Ueno, as modifies, discloses the wiring having all of the claimed features as discussed above with respect claim 1(2, 3),

Although Ueno doesn't explicitly disclose the metal seed layer has a width that is smaller than a width of the first metal diffusion-preventing layer, the metal wiring layer has a width that is smaller than a width of the metal seed layer, the metal wiring layer has a width at a top surface thereof that is narrower than a width at a bottom surface thereof, the metal wiring layer has a width that is smaller than a width of the first metal diffusion-preventing layer, at time the invention was made, it was well know that the design admit variation of the shape of the metal wiring layers (see Yamato, Fig. 5 and Kato, page 3, [0032] and Fig. 2). It has been held that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation" In re Aller, 220 F. 2d 454, 456, 105 USPQ

Art Unit: 2841

233, 235 (CCPA 1955). Further, it has been held *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) that change in shape and change in size of the configuration of the claimed device was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made, for Ueno to include in his invention that the metal seed layer has a width that is smaller than a width of the first metal diffusion-preventing layer, the metal wiring layer has a width that is smaller than a width of the metal seed layer, the metal wiring layer has a width at a top surface thereof that is narrower than a width at a bottom surface thereof, the metal wiring layer has a width that is smaller than a width of the first metal diffusion-preventing layer, motivated by its known suitability for its intended use. See MPEP §2144.07.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then, the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 2841

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yuriy Semenenko whose telephone number is (571) 272-6106. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean A. Reichard can be reached on (571)- 272-2800 ext. 31.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YS

A handwritten signature in black ink, appearing to read 'Tuan T. Dinh', with a stylized, sweeping flourish at the end.

TUAN T. DINH
PRIMARY EXAMINER